

# Innovations in mould making

Commersald Impianti has completed three Research and Development glass mould projects. Massimo Trigari, General Manager, discusses.

**T**echnological research by Commersald Impianti concerning machines and equipment for P.T.A. hard-facing glass moulds continues to produce innovation. The group, based in Modena, Italy, has completed three development activities this year, which were long awaited by its customers.

## Plasma microwelding

The first project was its research into Plasma microwelding (**Fig. 1**). It consists of the development of a technology that responds to a request to contain the hard-facing dimensions to the area of the contact glass of moulds and accessories.

The innovation has an aesthetic value of the finished product and it represents a drastic reduction of costs for the lower volume of the coating material, which results in a higher operating speed and a lower consumption of filler metal. From a metallurgical point of view a thin, fast and uniform thickness coating determines:

- Reduced dimension of the heat affected zone.
- Minor defects for the lower amount of base metal melted in the welding deposit.
- Regular transition area, straight and perfectly defined.

To obtain these aesthetics and economic advantages, care must be taken in groove preparation and the precision of fixtures.

The welding equipment must have a good control of the current and voltage to obtain a stable arc at low amperage to be able to make a 'cold' welding with all alloying elements in the matrix perfectly fused. The filler powder flow must be constant and regular and injected with precision in the plasma arc centre, to obtain a thin and regular bead with dispersion contained within 10%.

The tungsten electrode must be sharpened with care at a 40° vertex angle. Commersald Impianti working



Fig. 1: Plasma microwelding.

stations – even the oldest ones – with the new Microwelding nozzle are perfectly suitable for the purpose and have all the characteristics to obtain perfect microwelded beads.

## Business continuity

The second innovation is aimed at business continuity by limiting downtime due to programming errors or misinterpretation of the welding process.

Commersald Impianti has activated an advanced remote assistance service of its last generation, integrated to a Koy Vision system on favourable terms for buyers of PTA welding equipment.

The system mounted on the machine by the customer allows Commersald Impianti technicians to interact with the operator viewing the welding programmes remotely, advising and if necessary intervening from office via the internet. Integrating the remote assistance with a Koy Vision system, our technician from the office may participate in real time exactly as if they were on site, at minimal costs and with maximum efficiency.

Koy Vision gives an amazing overview: you can see the welding pool and nearby area in detail with a high-definition camera through an external monitor.

By recording the images the customer has the opportunity to make a considered post-process survey. The movie will be provided to the customer with the certification documents.

It should also be highlighted that when in automatic, the welding deposition cannot be controlled for security reasons by an operator within the work area. This may cause defects and rejects in production.

The perfect pool vision through the external monitor connected to the camera will be useful to understand why porosities or creaks appear, giving the possibility to intervene on the welding and moving parameters in real time, avoiding the waste to the benefit of cost containment.

Koy Vision operates in conditions of maximum safety with closed barriers by improving the efficiency of suction of the fumes, protecting the interior of the workshop by the flashes of light and observes the weld pool through the monitor.

## Robot servo systems

The third innovation concerns the robot servo systems. To move the pieces from the loading tray to the preheating induction system and from this to the welding machine, Commersald Impianti has developed robotic equipment inclusive of robot manipulator. Thanks to the use of a camera positioned above the loading tray, the robot is able to identify and accurately grab the workpiece while a load positioned on the base of the powder feeder detects changes in weight and identifies potential scrap pieces. It is a complete equipment able to work for a full shift without operator intervention, an innovation that reduces labour costs in mass production of moulds, neck-rings and all the other glassware accessories.

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